

Blood Compatibility in Cats

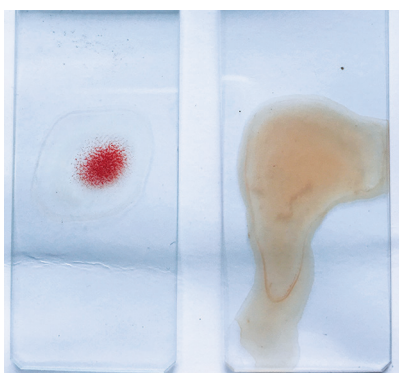
Eva Spada, DVM, PhD
Daniela Proverbio, DVM, PhD
Veterinary Transfusion Research Laboratory
University of Milan
Milan, Italy

In the Literature

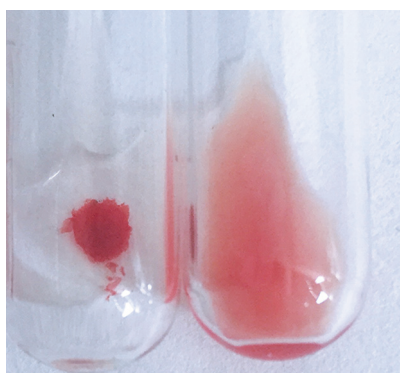
Goy-Thollot I, Nectoux A, Guidetti M, et al. Detection of naturally occurring alloantibody by an in-clinic antiglobulin-enhanced and standard crossmatch gel column test in non-transfused domestic shorthair cats. *J Vet Intern Med.* 2019;33(2):588-595.

FROM THE PAGE ...

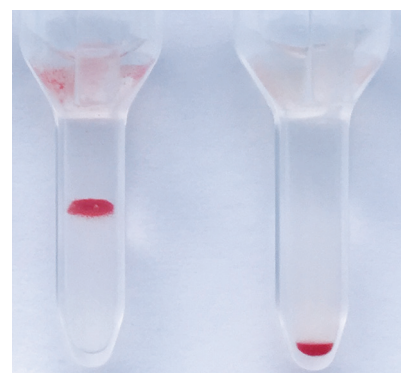
Domestic cats have one major blood group system, the AB system, which consists of types A, B, and AB. Most type A cats have no or weak naturally occurring anti-B antibodies (ie, alloantibodies), all type B cats have strong anti-A alloantibodies, and



▲ **FIGURE 1** Slide crossmatching technique. An incompatible crossmatching result (left) with all RBCs agglutinated (ie, presence of alloantibodies) and a compatible crossmatching result (right) with no evident agglutination (ie, absence of alloantibodies)



▲ **FIGURE 2** Tube crossmatching technique. An incompatible crossmatching result (left) with all RBCs agglutinated (ie, presence of alloantibodies) and a compatible crossmatching result (right) with no evident agglutination (ie, absence of alloantibodies)



▲ **FIGURE 3** Column card gel crossmatching technique. An incompatible crossmatching result (left) with all RBCs agglutinated (ie, presence of alloantibodies) and a compatible crossmatching result (right) with no evident agglutination (ie, absence of alloantibodies)

type AB cats have no alloantibodies.¹ Typing for the presence of A and B antigens is recommended for blood transfusion recipients, blood donors, and mates before breeding to ensure an effective transfusion, reduce acute hemolytic transfusion reactions, and prevent neonatal isoerythrolysis in type B lactating queens with type A kittens.² In addition to the feline AB system, the Mik RBC antigen has been proposed to be an additional feline blood group system. Alloantibodies may exist in some Mik-negative cats,³ but no commercial tests are available to blood type for this group.

In addition to typing for the presence of A and B antigens before a first transfusion, crossmatching is also recommended to detect the presence of alloantibodies outside the AB system (eg, anti-Mik). Methods for identifying naturally occurring antibodies in cats include slide (**Figure 1**), tube (**Figure 2**), gel (eg, anti-globulin-enhanced gel, column card gel; **Figure 3**), and immunochromatographic techniques.

This study detected naturally occurring antibodies via a new, in-practice, antiglobulin-enhanced gel tube crossmatching test and compared the results with a laboratory gel column card method to establish crossmatching recommendations in cats that have not previously received a transfusion. There was good agreement between the 2 crossmatching test results, but the antiglobulin-enhanced crossmatching kit revealed additional incompatibilities outside the AB system. The associated RBC antigens and clinical importance of these and other alloantibodies remain to be determined.

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... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** Type A cats have no or weak anti-B alloantibodies, whereas all type B cats have strong anti-A alloantibodies and type AB cats have no naturally occurring alloantibodies. However, naturally occurring antibodies could be found in some Mik-negative cats.
- 2** Naturally occurring antibodies outside the AB blood group system can be identified by performing crossmatching, and an anti-globulin-enhanced gel tube crossmatching test can reveal incompatibilities not detected by usual methods (eg, column card gel technique).
- 3** Based on this study and prior publications on alloantibodies, it is recommended that cats be crossmatched and typed for AB compatibility prior to their first transfusion.

References

1. Griot-Wenk ME, Callan MB, Casal ML, et al. Blood type AB in the feline AB blood group system. *Am J Vet Res*. 1996;57(10):1438-1442.
2. Bücheler J, Giger U. Alloantibodies against A and B blood types in cats. *Vet Immunol Immunopathol*. 1993;38(3-4):283-295.
3. Weinstein NM, Blais MC, Harris K, Oakley DA, Aronson LR, Giger U. A newly recognized blood group in domestic shorthair cats: the Mik red cell antigen. *J Vet Intern Med*. 2007;21(2):287-292.

Suggested Reading

Abrams-Ogg ACG. Feline recipient screening. In: Yagi K, Holowaychuk MK, eds. *Manual of Veterinary Transfusion Medicine and Blood Banking*. Ames, IA: Wiley Blackwell; 2016:129-154.